NEW COMBINATIONS IN THE PANARCTIC VASCULAR PLANT FLORA

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ABSTRACT

Thirty-eight new combinations are made in the families Asteraceae, Brassicaceae, Caryophyllaceae, Equisetaceae, Ericaceae, Fabaceae,

Gentianaceae, Orchidaceae, Papaveraceae, Poaceae, Polygonaceae, Potamogetonaceae, Ranunculaceae, Rosaceae, and Saxifragaceae. The combinations are made so as to be available for the forthcoming Panarctic Flora Checklist.

RESUMEN

Se hacen treinta y ocho nuevas combinaciones en las familias Asteraceae, Brassicaceae, Caryophyllaceae, Equisetaceae, Ericaceae, Fabaceae, Gentianaceae, Orchidaceae, Papaveraceae, Poaceae, Polygonaceae, Potamogetonaceae, Ranunculaceae, Rosaceae, y Saxifragaceae. Las combinaciones se hacen para que estén disponibles en la próxima publicación de la Panarctic Flora Checklist.

A Panarctic Flora (PAF) Checklist Project has been in progress since 1999 (see Nordal & Razzhivin 1999) cooperatively among botanists with arctic interests in Canada, Iceland, Norway, Russia, and U.S.A. Its main aim is to produce a checklist of all arctic vascular plants with critical notes on distribution, chromosome numbers, and with proposals for accepted names based on consensus or compromises among participants. To reach a consensus nomenclature means harmonizing the different names and combinations currently applied in Russia, North America, and northwestern Europe. Alignment has meant new combinations requiring publication. The authors of new combinations are I. Alsos (Longyearbyen, Norway), R. Elven (Oslo, Norway), A.A. Korobkov (St. Petersburg, Russia), D.F. Murray (Fairbanks, U.S.A.), V.V. Petrovsky (St. Petersburg, Russia), O. Rebristaya (St. Petersburg, Russia), P. Schönswetter (Vienna, Austria), H. Solstad (Oslo, Norway), N.N. Tzvelev (St. Petersburg, Russia), and B.A. Yurtsev (St. Petersburg, Russia, deceased).

Equisetaceae

Equisetum arvense L. subsp. alpestre (Wahlenb.) Schönswetter & Elven, comb. et stat. nov. Basionym: Equisetum arvense L. var. alpestre Wahlenb., Fl. Lapp. 296. 1812. Type: N SCANDINAVIA ("Lapland"). Type not traced (Moberg & Nilsson 1991).

Equisetum boreale auct., non Bong., Mém. Acad. Imp. Sci. St.-Pétersbourg, Sér. 6, Sci. Math. 2:174. 1833. Equisetum arvense L. var. boreale auct., non (Bong.) Rupr., Hist. Stirp. Fl. Petrop. 91. 1845. Equisetum arvense L. subsp. boreale auct., non (Bong.) Á. Löve, Náttúrufrædingurinn 18:101. 1948.

An arctic–alpine race of *Equisetum arvense* L. has in recent years been accepted as subsp. *boreale* (Bong.) Á. Löve (e.g., by Öllgaard 2000). Schönswetter et al. (2001) argued that the name "*boreale*" is misapplied for the race in question. It is based on a Bongard plant from Sitka in southeastern Alaska representing a morph within subsp. *arvense*, differing from the arctic and high alpine plants in many morphological features. The next available name is Wahlenberg's var. *alpestre*, and a combination as subspecies is proposed here.

Potamogetonaceae Stuckenia filiformis (Pers.) Börner subsp. borealis (Raf.) Tzvelev & Elven, comb. nov. BASIONYM: Potamogeton borealis Raf., Med. Repos., ser. 2, 5:354. 1808. Type: CANADA: QUEBEC: St. Lawrence R, Michaux (HOLOTYPE: P). Potamogeton filiformis Pers. var. borealis (Raf.) H. St. John, Rhodora 18:134. 1916.

Stuckenia filiformis (Pers.) Börner subsp. alpina auct., non (Blytt) R.R. Haynes, Les & M. Král, Novon 8:241. 1998.

Northern North American plants of *Stuckenia filiformis* (Pers.) Börner differ from the main race by their broader leaves and more congested inflorescences. Such plants have been considered by authors (e.g., Hul-

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tén 1968a; Cody 1996, 2000) as subsp. or var. *borealis*, based on Rafinesque's *Potamogeton borealis* from the St. Lawrence River region. Les and Haynes (1996) synonymized *Potamogeton borealis* with the Norwegian *Potamogeton marinus* L. f. *alpinus* Blytt, Norges Fl. 1:370 (1861), described from southern Norway, and they raised f. *alpina* to subspecific rank as the accepted name for the North American subspecies. Haynes et al. (1998) transferred *Potamogeton filiformis* to the genus *Stuckenia*, which we accept. Haynes and Hellquist (1998) reported subsp. *alpina* as restricted to North America and perhaps northeastern Asia, in spite of it being described from Norway.

Blytt's f. *alpinus* has not been lectotypified. The syntypes (O!) from the six sites listed in the protologue are all from southern Norwegian mountain valleys. They have not been studied by Les, Haynes or Hellquist.

Les and Haynes (1996: 390) stated, when they synonymized Norwegian '*alpina*' and North American '*borealis*', with priority for the former, that they had not seen type material (P) of '*borealis*'. Neither have we, but when we compare the syntypes of Blytt's Norwegian f. *alpinus* with North American plants, we find them different. We consider the Norwegian plants as montane–alpine modifications of European *Stuckenia filiformis* and not as an acceptable race (subspecies), whereas we consider the North American plant an acceptable race. We therefore propose to retain the North American name "*borealis*" for the northern North American plants. This taxon is characterised by two differential characters as given by Haynes and Hellquist (for subsp. *filiformis* vs. subsp. *alpina*, slightly modified here): leaves 0.2–0.4 mm vs 0.5–0.8(–1.0) mm broad, and infrutescence strongly interrupted and extending up to 4 cm vs more compact to somewhat interrupted and extending only up to 2 cm.

Orchidaceae

In the Panarctic Flora Checklist we accept *Limnorchis* Rydb. and *Lysiella* Rydb. as genera different from *Platanthera* Rich. We know of no thorough phylogenetic study of the *Platanthea* group, but in a study of Orchidinae and some Habenariinae, Bateman et al. (2003) found *Platanthera* (*Limnorchis*) *hyperborea* as peripheral to the main group of *Platanthera* spp. Acceptance of *Limnorchis* necessitates two new combinations:

- Limnorchis aquilonis (Sheviak) Rebrist. & Elven, comb. nov. BASIONYM: Platanthera aquilonis Sheviak, Lindleyana 14:193. 1999.
- Limnorchis huronensis (Nutt.) Rebrist. & Elven, comb. nov. BASIONYM: Orchis huronensis Nutt., Gen. N. Amer. Pl. 1:288. 1818. Platanthera huronensis (Nutt.) Lindl., Gen. Sp. Orchid. Pl. 288. 1835.

Poaceae

- Calamagrostis purpurascens R. Br. subsp. laricina (Louis-Marie) Elven, comb. et stat. nov. Basionym: Calamagrostis purpurascens R. Br. var. laricina Louis-Marie, Rev. Oka Agron. Inst. Agric. 20:153. 1946. Type: CANADA: QUEBEC: Ungava, Riviere aux Melezes (Larch R), 57°42'N, 68°25'W, Dutilly & Lepage 14602 (HOLOTYPE: CAN). Calamagrostis laricina (Louis-Marie) Louis-Marie, Naturaliste Canad. 85:70. 1958.
 - Calamagrostis poluninii T.J.Sørensen, Meddel. Grønland 136, 8:11. 1954. Type: GREENLAND: Kiagtut in Tunugdliarfik, 15 Jul 1947, Sørensen 188 (HOLOTYPE: C).

Greene (1980, 1984) recognized two races in the very widespread *Calamagrostis purpurascens*: var. *purpurascens* from northern Siberia to northern Greenland (and recently found also on Svalbard) and var. *laricina* restricted to northeastern Canada and southern and western Greenland. The latter race is characterized by being short-rhizomatous and by having awns not distinctly exserted from the spikelet. Sørensen's description of *C. poluninii* in 1954 was made without reference to (and probably while unaware of) Louis-Marie's earlier description of var. *laricina* in 1946. Greene seems to have been the first to compare the types and recognize that the two names apply to the same plant.

The southern and western Greenland plants named *C. poluninii* are an extension of the northeastern North American *C. purpurascens* var. *laricina*. As this is a major geographical race, the rank of subspecies is preferable to variety, and a new combination is proposed.

Koeleria pyramidata (Lam.) P. Beauv. subsp. seminuda (Trautv.) Elven, comb. nov. Basionym: Koeleria cristata Pers. var. seminuda Trautv., Trudy Imp. S.-Peterburgsk. Bot. Sada 5, 1 [Pl. Sib. Bor.]:138. 1877. Type: SIBERIA: northern Sakha (Yakutia),

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"Ad Lena inf. prope pag. Ajakit," 28 Jul 1875, *Czekanovski* (LECTOTYPE: LE, designated by Tzvelev, Zlaki SSSR 276. 1976.). *Koeleria seminuda* (Trautv.) Gontsch. in Kom., Fl. URSS 2:331. 1934. *Koeleria cristata* Pers. subsp. *seminuda* (Trautv.) Tzvelev, Novosti Sist. Vyssh. Rast. 7:71. 1971.

Koeleria cristata is an illegitime, superfluous name and must be replaced by *K. pyramidata* (Lam.) P. Beauv. *Koeleria seminuda* is here recombined as a subspecies within *K. pyramidata*.

Puccinellia phryganodes (Trin.) Scribn. & Merr. subsp. neoarctica (Á. Löve & D. Löve) Elven, comb. et stat. nov. BASIONYM: Phippsia neoarctica Á. Löve & D. Löve, Bot. Not. 128:499. 1976. TYPE: GREENLAND: Sydostbugt, Jul 1880, N. Hartz (HOLOTYPE: C). Puccinellia neoarctica (Á. Löve & D. Löve) Böcher et al., Grønlands Fl., ed. 3:293. 1978 [without basionym citation]. Puccinellia phryganodes (Trin.) Scribn. & Merr. "Greenland type" sensu Sørensen (1953).

Within the polymorphic, circumpolar *Puccinellia phryganodes*, Sørensen (1953) informally named four entities as "types": a fertile, tetraploid "Beringian type" (2n = 28) and three asexual types: a triploid "Greenland type" also widespread in arctic North America (2n = 21), a tetraploid "Spitsbergen—Novaya Zemlya type" restricted to these islands, and a "Siberian type" ranging from northeastern Norway (triploid) through arctic Russia and Siberia to Chukotka (tetraploid). Sørensen (1953) demonstrated anatomical and morphological differences in addition to the ploidy differences. We prefer to consider Sørensen's types major geographical races, i.e., subspecies, of a morphologically coherent species *phryganodes*. Subsp. *neoarctica* is a sterile stoloniferous race that reproduces by detached shoots.

Puccinellia phryganodes (Trin.) Scribn. & Merr. subsp. sibirica (Hadač & Á. Löve) Elven, comb. nov. BASIONYM: Puccinellia vilfoidea (Andersson) Á. Löve & D. Löve subsp. sibirica Hadač & Á. Löve in Á. Löve & D. Löve, Bot. Not. 114:36.
1961. Type: RUSSIA: "Waigatsch, Sinus Warnek," 14 Jul 1907, O. Ekstam (HOLOTYPE: S). Phippsia vilfoidea (Andersson) Á. Löve & D. Löve & D. Löve subsp. sibirica (Hadač & Á. Löve) Á. Löve & D. Löve, Bot. Not. 128:501. 1976. Puccinellia phryganodes (Trin.) Scribn. & Merr. subsp. asiatica Tzvelev in Tolm., Fl. Arct. URSS 2:186. 1964 [in error for "sibirica"]. Puccinellia phryganodes (Trin.) Scribn. & Merr. "Siberian type" sensu Sørensen (1953).

Tzvelev (1964) made a mistake in the basionym, replacing "sibirica" with "asiatica" when publishing *Puccinellia phryganodes* subsp. *asiatica*. At the rank of subspecies, the epithet "sibirica" (Hadač & Löve in Löve & Löve 1961) has priority over "asiatica" (Tzvelev 1964).

Vahlodea latifolia (Hook.) Hultén subsp. paramushirensis (Kudô) Elven, comb. nov. BASIONYM: Deschampsia atropurpurea (Wahlenb.) Scheele var. paramushirensis Kudô, J. Coll. Agric. Hokkaido Imp. Univ. 11:71. 1922. Type?: JAPAN: Paramushir I, Urafutoyama, 1920, Kudô 5787. Vahlodea atropurpurea (Wahlenb.) Fr. ex Hartm. subsp. paramushirensis (Kudô) Hultén, Fl. Kamtchatka 1:111. 1927. Vahlodea paramushirensis (Kudô) Roshev. in Kom., Fl. URSS 2:242, 750. 1934.

Erioblastus flexuosus Honda, J. Fac. Sci. Univ. Tokyo, sect. 3, Bot. 1:143. 1930. Described from Japan. Vahlodea flexuosa (Honda) Ohwi, Acta Phytotax. Geobot. 2:33. 1933.

The small genus *Vahlodea* (a segregate of *Deschampsia*) is disjunct in three very distant regions: around the North Atlantic, the northern Pacific, and in southernmost South America. From one to four species or subspecies have been proposed. Tzvelev recognized, besides the South American *V. magellanica* (Hook. f.) Tzvelev, three northern species: *V. atropurpurea*, *V. latifolia* and *V. flexuosa*. The amphi-Atlantic *V. atropurpurea* s. str. is fully allopatric with the two Pacific entities and differs morphologically from both of them. The most evident difference between the mainly northeastern Asian plant (*V. flexuosa* or *V. paramushirensis*) and the northwestern North American one (*V. latifolia*) is that the Asian plant has hairy leaves and the North American plant has glabrous leaves. They also differ in general habit, but there are many intermediates, especially in southern Alaska. Soreng et al. (2003) recognized only one species with two subspecies: subsp. *atropurpurea* (including both *V. latifolia* and the South American *V. magellanica*) and subsp. *paramushirensis*. The solution chosen for the Panarctic Flora Checklist is two northern species: one amphi-Atlantic (*V. atropurpurea*) and one amphi-Pacific (*V. latifolia*), the latter with two subspecies (subsp. *latifolia* and subsp. *paramushirensis*)

Polygonaceae

Bistorta elliptica (Willd. ex Spreng.) V.V. Petrovsky, D.F. Murray & Elven, comb. nov. Basionym: Polygonum ellipticum

Willd. ex Spreng., Syst. Veg. 2:253. 1825. Described from eastern Siberia. Polygonum bistorta L. subsp. ellipticum (Willd.) V.V. Petrovsky in Tolm., Fl. Arct. URSS 5:176. 1966. Bistorta major Gray subsp. elliptica (Willd.) Soják, Preslia 46:152. 1974.

The widespread Bistorta officinalis Delarbre s. lat. is disjunct montane and arctic. The northern montane and arctic plants differ from non-arctic European Bistorta officinalis s. str. in several characters, and they should be accepted as different race(s) or species. Freeman and Hinds (2005) accepted the northwestern North American and northeastern Asian plant as B. plumosa (Small) Greene. Petrovsky (1966), treating the plants for arctic Russia as races of Polygonum bistorta, assigned the plants from northeastern Europe and northern Siberia (Taimyr) to subsp. bistorta (= subsp. officinalis) and those from northeastern Siberia (Anabar–Olenyok) to the Chukchi Peninsula to subsp. ellipticum. He considered the North American subsp. plumosa as different from both of these. We agree with this division of the arctic Russian material but not with the application of the names. Tzvelev and Yurtsev (pers. comm.) assumed the "elliptica" name to belong to the western entity. Polygonum ellipticum was described from non-arctic parts of the Lena River area. In the Arctic, the limit between the western and the eastern entities runs through the Taimyr, but further south in Siberia and the Russian Far East this otherwise western arctic entity occurs in the mountains all the way eastward to the Okhotsk Sea. We therefore recombine Polygonum ellipticum within Bistorta and accept it as the name for the northern Russian and northwest Siberian plant. We consider the northeast Siberian and northern Russian Far East plants as indistinguishable from the North American Bistorta plumosa, in spite of a suggested difference in chromosome numbers.

Caryophyllaceae

Silene involucrata (Cham. & Schltdl.) Bocquet subsp. furcata (Raf.) V.V. Petrovsky & Elven, comb. et stat. NOV. BASIONYM: Silene furcata Raf., Autik. Bot. 28. 1840. TYPE: CANADA: Hudson Bay–Labrador area: type not located. *Melandrium furcatum* (Raf.) Hultén, Acta Univ. Lund., n. s., sect. 2, 40, 1:702. 1944. [printing date not given, but probably early 1944] or: (Raf.) Hadač, Skr. Svalbard Nordishavet 87:34. 1944. [printed 04 May 1944]. *Gastrolychnis furcata* (Raf.) Hultén, Acta Univ. Lund., n.s., sect. 2, 40, 1:702. 1944. [comb. illegit].

Silene involucrata (Cham. & Schltdl.) Bocquet is a polymorphic species. We recognize it with three major races, a northern European—northwestern Siberian subsp. *tenella* (Tolm.) Bocquet, a northeastern Siberian—northwestern North American subsp. *involucrata*, and an arctic circumpolar subsp. *furcata*. Bocquet (1967) included both the boreal northern European and northwestern Siberian plants and the arctic circumpolar plants within *Silene involucrata* subsp. *involucrata*, an approach followed by Kurtto (2001) and Morton (2005). We find the races distinct at the level of subspecies. In three areas of co-occurrence (in the lower Lena River area of northern Siberia, in eastern Chukotka, and in northern Alaska—northwestern Canada) they are fully distinct in nature. Subspecies *furcata* then becomes the most widespread of the races. *Silene furcata* Raf. is not typified, but this race is the only one present in the Hudson Bay—Labrador area from where it was described. A subspecific combination based on this name is proposed. This was also the opinion of Tzvelev (2000).

Silene soczavana (Schischk.) Bocquet var. macrosperma (A.E. Porsild) V.V. Petrovsky, D.F. Murray & Elven, comb. et stat. nov. BASIONYM: Melandrium macrospermum A.E. Porsild, Rhodora 41:225. 1939. Type: ALASKA: Norton Sound, Unalakleet, 63°52'N, 106°20'W, A.E. Porsild & R.T. Porsild 1147 (HOLOTYPE: CAN). Lychnis macrosperma (A.E. Porsild), J.P. Anderson, Iowa State Coll. J. Sci. 20:250. 1946. Silene macrosperma (A.E. Porsild) Hultén, Circumpolar Pl. 2:326. 1971. Gastrolychnis macrosperma (A.E. Porsild) Tolm. & Kozhanch. in Tolm., Fl. Arct. URSS 6:115. 1971. Silene uralensis (Rupr.) Bocquet subsp. porsildii Bocquet, Candollea 22:27. 1967. Nomen novum for Melandrium macrospermum A.E. Porsild.

Bocquet (1967) treated Porsild's Melandrium macrospermum as subsp. porsildii of the widespread Silene uralensis, as a central Alaskan mountain endemic, whereas he accepted the northeastern Asian Silene soczavana as a separate species. The tetraploid chromosome number, morphology, ecology, and geography support inclusion of *M. macrosperma* within *S. soczavana*, not within *S. uralensis*. According to the material we have inspected, Silene soczavana var. macrosperma is a widespread taxon from eastern Chukotka and the northern Bering Sea islands northeast to the Alaskan North Slope and south and southeast to Kodiak Island and northern British Columbia.

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Silene villosula (Trautv.) V.V. Petrovsky & Elven, comb. nov. BASIONYM: Lychnis ajanensis Regel var. villosula Trautv., Acta Horti Petrop. 10:498. 1887. Type: RUSSIA: northern Sakha (Yakutia), "ostia fl. Lena, Tonoldo [??]," Köl. [Koelreuter?] 4711 (LE). Lychnis sibirica L. subsp. villosula (Trautv.) Tolm., Trudy Polyarn. Komiss. 8:118. 1932. Sofianthe villosula (Trautv.) Tzvelev, Novosti Sist. Vyssh. Rast. 33:97. 2001.

The evidence of Oxelman et al. (2001) strongly supports inclusion of the Lychnis sibirica L. group in Silene. This group contains three named entities that reach the Arctic (and some more southern entities). Oxelman et al. (2001) accepted two of them as species: Silene linnaeana Vorosch. and S. samojedora (Sambuk) Oxelman. They did not consider the third entity, "villosula," in their analysis. Oxelman (pers. comm.) is open to accepting "villosula" as a third species. Tzvelev (2001) had already treated the three entities as species, but

in the genus Sofianthe.

Silene violascens (Tolm.) V.V. Petrovsky & Elven, comb. nov. BASIONYM: Gastrolychnis violascens Tolm., Fl. Arct. URSS 6:115. 1971. TYPE: RUSSIA: Sakha (Yakutia), "ad flumen Daaldyn, in ditione fluminis Marcha, fluminis Viluj confluentis," 16 Jul 1957, A. Lukitcheva (HOLOTYPE: LE?).

?Lychnis uniflora Ledeb., Mém. Acad. Imp. Sci. St. Pétersbourg Hist. Acad. 5:536. 1815. Түре: RUSSIA: "Herb. Ledeb. In Sibiria transbaicalensi, lect. am. Tilesius" (нолотуре: LE!). ?Gastrolychnis uniflora (Ledeb.) Tzvelev, Bot. Zhurn. (Moscow & Leningrad) 85(11):101. 2000.

Silene violascens is related to *S. uralensis* but differs in morphology, habitat, and range. It is mainly a Siberian forest species. It is here recombined within *Silene* as the evidence of Oxelman et al. (2001) makes it very difficult to retain the genus *Gastrolychnis*. We also consider the type of *Gastrolychnis uniflora* (*Lychnis uniflora*), which Tzvelev (2000) considered a priority name for *Gastrolychnis uralensis*, a small plant of *S. violascens*. This will not influence priority in *Silene* as there is an earlier *S. uniflora* Roth 1794.

Ranunculaceae

Coptidium × spitsbergense (Hadač) Elven, comb. nov. BASIONYM: Ranunculus x spitsbergensis Hadač, Stud. Bot. Cech. 5:3. 1942. Type: NORWAY: Svalbard, Longyearbyen, 16 Jul 1939, E. Hadač 260 (HOLOTYPE: O).

Ranunculus pallasii Schltdl. var. minimus Rupr., Fl. Samojed. Cisural. 18. 1845. Type: RUSSIA: northeastern European Russia. Ranunculus pallasii Schltdl. var. spetsbergensis Nath., Kongl. Svenska Vetenskapsakad. Handl., n.s., 20, 6:21. 1883. Type: NORWAY: Svalbard.

Coptidium (*Ranunculus*) *spitsbergense* is a seed-sterile triploid hybrid *Coptidium lapponicum* x *pallasii*. On Svalbard, from where it was first described, it occurs fairly frequently in large stands and nearly always in the absence of one or both parents (*C. pallasii* is very rare on Svalbard). It is obviously not a case of occasional hybridisation. Dispersal is assumed to be mainly or entirely by shoot fragments carried by birds. The identification with Ruprecht's var. *minimus* was made by Tolmachev (1971).

Hadač's *Ranunculus spitsbergensis* was not explicitly based on Nathorst's var. *spetsbergensis* and was given with a separate type. Nathorst's name, spelling and type have priority for a variety, whereas Hadač's name, spelling and type have priority for a species, see Jalas (1988). The combination *Coptidium* × *spitsbergense* (Hadač) Hadač in Á. Löve & D. Löve, North Atlantic Biota and their History 218 (1963), is illegitimate as the genus *Coptidium* was not validly published until 1994.

Ranunculus subborealis Tzvelev subsp. **pumilus** (Wahlenb.) Elven, comb. nov. Basionym: Ranunculus acris L. var. pumilus Wahlenb., Fl. Suec. 1:351. 1824. Type: SWEDEN: Lycksele lappmark, "Sorsele, at Ruopsokjaure," 03 Aug1948, O. Rune 200/48 (NEOTYPE: UPS, designated by Nurmi in Jonsell, Nordic J. Bot. 20:520. 2001, according to Moberg and Nilsson 1991:298, no original material is available for typification). Ranunculus acris L. subsp. pumilus (Wahlenb.) Á. Löve & D. Löve, Taxon 34:164. 1985. ?Ranunculus lanuginosiformis Selin ex Trauty., Increm. Fl. Phaenog. Ross. 1:21. 1882.

We accept *Ranunculus subborealis* Tzvelev (the name replacing *R. borealis* Turcz. in a northern context) as a species separate from *R. acris* L.

There can be two different interpretations of the name "*pumilus*" and two different meanings derived from them. The older meaning is Nordic and based on *Ranunculus acris* var. alpha Wahlenb. 1811, formalized as *R. acris* var. *pumilus* Wahlenb. 1824. Nurmi's typification assigns this name to a Scandinavian alpine subglabrous race more closely related to *R. subborealis* than to *R. acris*. Intermediates are frequent between subsp. *pumilus* and other races of *R. subborealis* but not between subsp. *pumilus* and *R. acris*.

The other meaning is Russian and based on *R. acris* var. *pumilus* "Wahlenb. ex" J. Fellm., Bull. Soc. Naturalistes Moscou 8:271. 1835. If Fellmann really based his variety on Wahlenberg's var. alpha, then it is homotypic and a superfluous combination antedated by Wahlenberg 1824. Thus the Nordic meaning as established by the typification of Nurmi is also valid for Fellmann's variety. If not, var. *pumilus* sensu Fellmann is a later homonym. From the descriptions in several Russian floras, the application of the name var. *pumilus* J. Fellm. in Russian areas is different from that of the name var. *pumilus* Wahlenb. in Nordic areas.

Ranunculus subborealis Tzvelev subsp. villosus (Drabble) Elven, comb. et stat. nov. BASIONYM: Ranunculus acris L. f. villosus Drabble, Bot. Soc. Exch. Club Brit. Isles 9:472. 1930. Ranunculus acris L. subsp. borealis (Regel) Nyman var. villosus (Drabble) S.M. Coles, Watsonia 8:240. 1971.

This race connects morphologically with *Ranunculus subborealis* s. str. in northeastern Fennoscandia, with transitions in the Norwegian provinces of Troms and Finnmark and in northern Sweden and Finland. Transitions towards *R. acris* s. str. are rare. Subspecies *villosus* is the dominant entity of the *R. acris* group in the Faeroes and Iceland and a major entity in western and northern Scandinavia.

Papaveraceae

Papaver labradoricum (Fedde) Solstad & Elven, comb. et stat. nov. BASIONYM: Papaver nudicaule L. subsp. radicatum var. (gamma) labradoricum Fedde in Engl., Pflanzenreich IV-104(40):377. 1909. Type: GREENLAND: "Flora Groenlandiae boreali– occidentalis, Gebiet des Umanakfjords (70–71° N. Br.)," 9 Aug 1893, *E. Vanhöffen* 35(94) (lectotype: B 10 0267999!). Papaver radicatum Rottb. subsp. labradoricum (Fedde) Fedde in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 17b:120. 1936. Papaver lapponicum (Tolm.) Nordh. subsp. labradoricum (Fedde) Knaben, Blyttia 16:78. 1958.

The eastern Canadian and Greenlandic *Papaver labradoricum* resembles *P. lapponicum* (Tolm.) Nordh. and *P. radicatum* Rottb. and has been considered as a subspecies of either one of these (e.g., Fedde 1936; Knaben 1958, 1959a, 1959b). The assignment to *P. radicatum* has been justified by morphology (Kiger & Murray 1997), that to *P. lapponicum* by sharing the same octoploid chromosome number (2n = 56), whereas *P. radicatum* is decaploid. In an unpublished study by Solstad et al., based on Structure analysis of AFLP DNA markers, *P. labradoricum* is a distinct entity (species) which joins comparatively closely with a Beringian species (*P. cf. detritophilum*) but is distant from the Atlantic European *P. radicatum* and the amphi-Atlantic *P. lapponicum*. Several morphological features are also shared with the Beringian species, but *P. detritophilum* is hexaploid (2n = 42). A separation is further supported by the low fertility found by Knaben (1959b) in crosses between *P. labradoricum* on one hand and *P. lapponicum* and *P. radicatum* on the other, at the level of crosses between species according to Knaben. *Papaver labradoricum* is probably an allopolyploid with a complicated parentage, as are *P. lapponicum* and *P. radicatum*.

Brassicaceae

Arabidopsis petraea (L.) V.I. Doron. subsp. septentrionalis (N. Busch) Elven & D.F. Murray, comb. nov. BASIONYM: Arabis septentrionalis N. Busch, Bot. Mater. Gerb. Glavn. Bot. Sada RSFSR 3(3–4):10. 1922. Type: RUSSIA: northeastern European Russia (Novaya Zemlya) and northern Siberia (HOLOTYPE?: LE). Arabis petraea (L.) Lam. subsp. septentrionalis (N. Busch) Tolm. in Tolm. & Blumenthal, Trudy Bot. Muz. 23:204. 1931. Cardaminopsis septentrionalis (N. Busch) O.E. Schulz in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 17b:541. 1936.

O'Kane and Al-Shehbaz (1997) proposed *Arabidopsis petraea* s. lat. as one of three subspecies of *Arabidopsis lyrata* (L.) O'Kane & Al-Shehbaz. Tolmachev (1975) considered the arctic Russian material as two subspecies of *Arabis petraea* (L.) Lam. Doronkin in Malyschev and Peschkova (1994) accepted only a collective *Cardaminopsis petraea* (L.) Hiitonen. We have studied herbarium material of the three proposed entities ("*petraea*," "*septentrionalis*," and "*umbrosa*") and have also seen all three in the field in northern Europe, Siberia, and Alaska–Yukon. They are allopatric to slightly parapatric, with "*umbrosa*" in northwestern North America and northern–northeastern Asia (slightly overlapping with the next), "*septentrionalis*" in northern Asia and northeastern Europe, and "*petraea*" in northwestern and central Europe. There are other, non-arctic entities in the group. We are able to recognize the arctic entities on morphological criteria, and transitional forms have not been documented. *Arabidopsis petraea* s. lat. also differs in some morphological characters from A. *lyrata–kamtschatica*, without documented intermediates. The choice is between treating the arctic taxa as

three species or as three subspecies of *A. petraea*. Pending a combined molecular and morphological investigation of the entire aggregate applying molecular markers more suitable to specific/subspecific variation in recently evolved taxa, we propose to treat them as three subspecies.

Arabidopsis petraea (L.) V.I. Dorof. subsp. umbrosa (Turcz. ex Steud.) Elven & D.F. Murray, comb. nov. BASIONYM: Arabis umbrosa Turcz. ex Steud., Nomencl. Bot. 2:118. 1824. TYPE: RUSSIA: Siberia: "in sabulosis ad fl. Irkut," Turczaninow (HOLOTYPE: MW). Arabis petraea (L.) Lam. subsp. umbrosa (Turcz. ex Steud.) Tolm., Fl. Arct. URSS 7:97. 1975. Cardaminopsis petraea (L.) Hiitonen subsp. umbrosa (Turcz. ex Steud.) Peschkova, Fl. Tsentr. Sib. 1:396. 1979.

Arabis arenicola (Richardson ex Hook.) Gelert var. pubescens (S.Watson) Gelert, Bot. Tidsskr. 21:290. 1898. Type: CANADA: Hudson Bay, York Factory.

Arabis media N. Busch, Bot. Mater. Gerb. Glavn. Bot. Sada RSFSR 3(3–4):11. 1922. Type: RUSSIA: eastern Siberia (LE). Cardaminopsis media (N. Busch) O.E. Schulz in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 17b:541. 1936.

The two entities subsp. *septentrionalis* and subsp. *umbrosa* are morphologically close but, as far as we have observed (herbarium, field in northern Sakha), they are without intermediates in the area of sympatry in northern Siberia.

Saxifragaceae

The phylogenetic analyses of Soltis et al. (1996, 2001) show that there are two major branches of genera in Saxifragaceae, and that a large segregate of traditional *Saxifraga* L., i.e., *Micranthes* Haw. (s. lat.) together with, e.g., *Chrysosplenium* L., belongs in a different branch from *Saxifraga* s. str. The molecular evidence makes it difficult to retain *Micranthes* within *Saxifraga*, and (like Brouillet & Gornall 2007) we accept it as a separate genus for the Checklist. Several combinations within *Micranthes* have been made in earlier times, and Brouillet and Gornall (2007) made the combinations they needed for their treatment for *Flora of North America*. This treatment does not cover the Asian taxa, and also for a few North American taxa we prefer another rank than chosen by Brouillet and Gornall.

Micranthes hieraciifolia (Waldst. & Kit. ex Willd.) Haw. subsp. longifolia (Engl. & Irmsch.) Elven & D.F. Murray, comb. nov. Basionym: Saxifraga hieraciifolia Waldst. & Kit. ex Willd. f. longifolia Engl. & Irmsch. in Engl., Pflanzenreich IV-117(67):24. 1916. Type: RUSSIA: Russian Far East: Chukchi Peninsula, St. Lawrence Bay, "St. Lorenzbusen," Chamisso (B), "Lütke's Hafen," A. & A. Krause 163 (B), syntypes; Saxifraga hieraciifolia Waldst. & Kit. ex Willd. subsp. longifolia (Engl. & Irmsch.) Jurtz. & V.V. Petrovsky, Byull. Moskovsk. Obshch. Isp. Prir., Otd. Biol. 85, 6:101. 1980.

Saxifraga hieraciifolia Waldst. & Kit. ex Willd. subsp. czukczorum Chrtek & Soják, Preslia 53:71. 1981. Түре: RUSSIA: Russian Far East, "Prov. Magadan, regio Tschukotsky, trajectus jugi Iskatenj, vicin. 32 km ...," 2 Aug 1967. T. Derviz-Sokolova & T. Voronova (ноготуре: PR).

Micranthes hieraciifolia is a polyploid to highly polyploid (2n = 56 - 120), circumpolar-alpine species where Zhmylev in Elven et al. (2007) stated that: "This species shows considerable eco-morphological plasticity, not correlated with the chromosome numbers". We do not agree. Large parts of the material from northeastern Asia and Alaska, i.e., Beringia, deviate from the non-Beringian material in several features. We have surveyed northwestern North American and some northeastern Asian material (ALA, O) and find that the characters reported for subsp. longifolia vs subsp. hieraciifolia mostly hold, e.g.: leaves narrow, long-petiolate and acute with little pubescence vs broader, more short-petiolate and subacute to subobtuse and more hairy; stems with little pubescence vs distinctly pubescent; petals purple and as long as sepals vs pink and much shorter and narrower than sepals; and sepals purple vs green with purple dots. The inflorescence of ssp. longifolia is also more interrupted when fully grown, but there is overlap in this character. These characters largely separate between two easily identifiable groups: subsp. longifolia as narrowly amphi-Beringian and subsp. hieraciifolia as circumpolar and also common and co-occurring with subsp. longifolia in the amphi-Beringian regions. Subsp. longifolia is thereby fully sympatric with subsp. hieraciifolia, at least in an arctic context. There is also a suggested ploidal difference. All reports of comparatively low chromosome numbers (2n =56 and 63) are from northeastern Yakutia and Chukotka where these numbers are reported together with the prevalent much higher numbers everywhere else in northern and arctic regions (2n = 100 - 120). From Alaska, only highly polyploidal counts are reported (2n = >100 and 112), but these reports are partly from localities outside the range of subsp. longifolia as we have recorded it.

The names subsp. *longifolia* and subsp. *czukczorum* were published one year apart (1980 and 1981), and we assume that they represent the same taxon and that the authors were unaware of the other publication.

On the American side, subsp. *longifolia* is common in western Alaska north and east to the western Brooks Range (on the north coast as very rare east to Demarcation Point) and to the Kobuk and Yukon river valleys. In southwestern and south–central Alaska it is the exclusive race, e.g., in the Goodnews Bay area, Alaska Peninsula, and on Kodiak and smaller offlying islands.

Micranthes lyallii (Engl.) Small subsp. hultenii (Calder & Savile) Elven & D.F. Murray, comb. nov. BASIONYM: Saxifraga lyallii Engl. var. hultenii Calder & Savile, Canad. J. Bot. 38:418. 1960. Type: CANADA: BRITISH COLUMBIA: Queen Charlotte Islands, Moresby Island, 20 mi S of Moresby Camp, 29 Jul–2 Aug 1957, Calder, Savile & Taylor 23106 (HOLOTYPE: DAO). Saxifraga Iyallii Engl. subsp. hultenii (Calder & Savile) Calder & R.L. Taylor, Canad. J. Bot. 43:1393. 1965.

Brouillet and Gornall (2007) did not include the proposed northern race of *Saxifraga lyallii* in their recombinations. There is a gap in the range between the populations in the eastern Cordilleras (subsp. *lyallii*) and those in the western and northern Cordilleras (subsp. *hultenii*). We follow Calder and Savile (1960) and Calder and Taylor (1965) in acceptance of two major geographical races, i.e., subspecies in the Checklist concept.

Micranthes merkii (Fisch. ex Sternb.) Elven & D.F. Murray, comb. nov. Basionym: Saxifraga merkii Fisch. ex Sternb., Revis. Saxifrag., Suppl. 1:1. 1822. Type: RUSSLA: the Transbaikal area, "In humidis montis Jablonoi Chrebet," Redowsky (HOLOTYPE?: LE).

Micranthes merkii is a distinct Asian species, assigned by Zhmylev in Elven et al. (2007) to its own sect. Merkianae.

Micranthes nelsoniana (D. Don) Small subsp. aestivalis (Fisch. & C.A. Mey.) Elven & D.F. Murray, comb. nov. Basionym: Saxifraga aestivalis Fisch. & C.A. Mey., Index Sem. Hort. Petrop. 1:37. 1835. Type: RUSSIA: S Siberia, Altai, 1817. Herb. Fischer (LECTOTYPE: LE), see Siplivinsky (1976). Micranthes aestivalis (Fisch. & C.A. Mey.) Small, N. Amer. Fl. 22, 2:145. 1905. Saxifraga nelsoniana (D. Don) Small subsp. aestivalis (Fisch. & C.A. Mey.) D.A. Webb, Feddes Repert. 69:154. 1964. Micranthes nelsoniana (D. Don) Small var. aestivalis (Fisch. & C.A. Mey.) Gornall & H. Ohba in Brouillet & Gornall, J. Bot. Res. Inst. Texas 1:1020. 2007.

Brouillet and Gornall (2007) recombined *Micranthes nelsoniana* var. *aestivalis*. This Asian plant is considered by some Russian authors as a separate species (i.e., Rebristaya 1984), by others as a major geographical race, i.e., a subspecies (Malyschev 1997; Zhmylev in Elven et al. 2007) due to occurrence of intermediate plants in the zone of overlap. We accept the latter proposal and make the necessary combination.

Micranthes nelsoniana (D. Don) Small. subsp. insularis (Hultén) Elven & D.F. Murray, comb. nov. BASIONYM: Saxifraga punctata L. subsp. insularis Hultén, Svensk Bot. Tidskr. 30:524. 1936. Type: ALASKA: Aleutian Islands, Carlisle Island, 15 Jul 1932, E. Hultén 6591 (HOLOTYPE: S); Saxifraga nelsoniana D. Don subsp. insularis (Hultén) Hultén, Bot. Not. 126:494. 1973. Saxifraga insularis (Hultén) Sipliv., Novosti Sist. Vyssh. Rast. 13:139. 1976. Micranthes nelsoniana (D. Don) Small. var. insularis (Hultén) Gornall & H. Ohba in Brouillet & Gornall, J. Bot. Res. Inst. Texas 1:1020. 2007.

Brouillet and Gornall (2007) recombined Hultén's Saxifraga punctata subsp. insularis (and Siplivinsky's Saxifraga insularis) as Micranthes nelsoniana var. insularis. This is an amphi-Pacific plant in very oceanic regions from Sakhalin, the Kuriles, Kamtchatka, and the Aleutian Islands to the very tip of the Alaska Peninsula, mostly well outside the range of *M. nelsoniana* s. str. (see Hultén 1968). Hultén (1968) reported intermediates towards subsp. *nelsoniana* in the zone of overlap on the Alaska Peninsula, Kodiak Island, and the Seward

Peninsula. In our opinion, this is a case of subspecific variation, and we recombine accordingly.

Micranthes porsildiana (Calder & Savile) Elven & D.F. Murray, comb. nov. BASIONYM: Saxifraga punctata L. subsp. porsildiana Calder & Savile, Canad. J. Bot. 38:429. 1960. Type: CANADA: British Columbia, Murray Range at Azouzetta Lake, Hart Hwy, 4 Aug 1954. Calder, Savile & Ferguson 14079 (HOLOTYPE: DAO). Saxifraga nelsoniana D. Don subsp. porsildiana (Calder & Savile) Hultén, Bot. Not. 126:494. 1973. Saxifraga porsildiana (Calder & Savile) Jurtz. & V.V. Petrovsky, Bot. Zhurn. (Moscow & Leningrad) 58:1339. 1973.

Micranthes porsildiana was treated by Hultén (1968) as a subspecies of Saxifraga punctata auct. (= Saxifraga (Micranthes) nelsoniana), as was subsp. insularis. Brouillet and Gornall (2007) did not include or mention this entity. Micranthes porsildiana has a large overlap in range with *M. nelsoniana* in Alaska and eastern Chukotka.

Within these regions, we have several times in Alaska and Chukotka observed the two growing in close proximity, sometimes nearly mixed in the stands, without any evidence of intermediates. Zhmylev (1995) assigned *M. nelsoniana* and *M. porsildiana* (as *Saxifragas*) to different series, respectively, series *Aestivalis* Zhmylev and series *Reniformes* Zhmylev. Rank as two different species is merited.

Micranthes redofskyi (Adams) Elven & D.F. Murray, comb. nov. BASIONYM: Saxifraga redofskyi Adams, Nouv. Mém. Soc. Imp. Naturalistes Moscou 3:241. 1834. TYPE: RUSSIA: N Yakutia, "Fl. Lenam," Adams ex herb. Trinius 2911 (LECTOTYPE?: MW).

Micranthes redofskyi is a diploid (2n = 20) belonging in sect. *Micranthes* together with at least three assumed close relatives: the seed-reproducing, amphi-Atlantic *M. stellaris* (L.) Galasso, Banfi & Soldano (2n = 28), the also seed-reproducing, Pacific North American *M. ferruginea* (Graham) Brouillet & Gornall (2n = 20), and the bulbil-reproducing, arctic circumpolar *M. foliolosa* (R.Br.) Gornall 2n = 40-64). All four species are morphologically distinct, but *M. foliolosa* has been assumed (Zhmylev in Elven et al. 2007) to be: "... a complex of 2–3 entities formed as a result of polyploidy of pseudoviviparous races of *Saxifraga stellaris*, *S. redofskyi* and *S. ferruginea*". The pseudovivipary (bulbils) could be the result of the polyploidization, and not a feature inherited from the parental entities. Arctic plants of *Micranthes foliolosa* are morphologically much closer to *M. redofskyi* than to *M. stellaris* or *M. ferruginea*. An unpublished investigation based on AFLP DNA markers and comparing these species (A. Tribsch, Salzburg) connects *M. foliolosa* sampled throughout the Arctic closely to *M. redofskyi* (and not to *M. stellaris*). The more floriferous populations of *M. foliolosa* are found in the Beringian regions, with lower chromosome numbers than the majority of the plants, overlapping in range with *M. redofskyi* and close to the range of *M. ferruginea*. *Micranthes redofskyi* is restricted to northeastern Asia from northern Yakutia eastwards to Chukotka.

Rosaceae

Dryas punctata Juz. subsp. hookeriana (Juz.) Jurtz., comb. nov. BASIONYM: Dryas hookeriana Juz., Izv. Glavn. Bot. Sada SSSR 28:325. 1929. TYPE: NORTH AMERICA (western): "Rocky Mountains," Hooker (LE, ex Herb. Fischer, Ledebour). Dryas octopetala L. subsp. hookeriana (Juz.) Hultén, Acta Univ. Lund., n.s., sect. 2, 42(1):1046. 1946.

Dryas hookeriana is recombined as a Cordilleran subspecies of the Asian and Beringian *D. punctata*. They share the adaxial leaf surface punctate glands, the abaxial leaf surface red, stipitate glands, and the absence of feathery hairs of the *D. octopetala* type.

Potentilla anserina L. subsp. yukonensis (Hultén) Soják ex Elven & D.F. Murray, comb. nov. Basionym: Potentilla yukonensis Hultén, Acta Univ. Lund., n.s., sect. 2, 42(1):1033. 1946. Type: U.S.A. Alaska: Palisades, 14 Jul 1902, Hollick (HOLOTYPE: NY). Type of Argentina subarctica Rydb., N. Amer. Fl. 22(4):354. 1908. Potentilla egedii Wormsk. subsp. yukonensis (Hultén) Hultén, Ark. Bot. ser. 2, 7(1):72. 1968.

Potentilla anserina subsp. *yukonensis* is an interior northwestern North American regional race, differing from the other races (subsp. *anserina*, *egedii*, *pacifica*) to the same degree as these do among themselves. Treatment at the same rank is appropriate, either as four species or as four subspecies. We have chosen the latter course due to the frequent occurrence of intermediates in zones of contact. The name *Potentilla yukonensis* is a nomen novum as the epithet "*subarctica*" is inapplicable at species level due to *Potentilla subarctica* Rydb., N. Amer. Fl. 22(4):347. 1908. The combination *P. anserina* subsp. *yukonensis* has already been used as a nom. nud. in a key by Soják to section *Pentaphylloides* (Soják 1994:70).

Fabaceae

Hedysarum boreale Nutt. subsp. dasycarpum (Turcz.) D.F. Murray & Elven, comb. et stat. nov. BASIONYM: Hedysarum dasycarpum Turcz., Bull. Soc. Imp. Naturalistes Moscou 13:63. 1840. Type: RUSSIA: Sakha (Yakutia).

We consider the northwestern North American *Hedysarum mackenzii* and the northeastern Asian *H. dasy-carpum* as allopatric subspecies of a more widely circumscribed *H. boreale*. The former is already combined as *H. boreale* Nutt. subsp. *mackenzii* (Richardson) S.L. Welsh.

Ericaceae

Rhododendron tomentosum (Stokes) Harmaja subsp. decumbens Elven & D.F. Murray, comb. nov. BASIONYM: Ledum palustre L. var. decumbens Aiton, Hort. Kew. 2:65. 1789. TYPE: CANADA: Hudson Bay (HOLOTYPE:?). Ledum decumbens (Aiton)

Lodd. ex Steud., Nomencl. Bot., ed. 2, 2:20. 1841. Ledum palustre L. subsp. decumbens (Aiton) Hultén, Fl. Kamtchatka 4:8. 1930. Rhododendron subarcticum Harmaja, Ann. Bot. Fenn. 27:203. 1990. Nom. nov. for Ledum decumbens within Rhododendron. Rhododendron tomentosum (Stokes) Harmaja subsp. subarcticum (Harmaja) G.D. Wallace, Madroño 39:77. 1992. Nom. illeg.

Harmaja (1990) considered this entity a species and coined the name *Rhododendron subarcticum*, with *Ledum palustre* var. *decumbens* as its typonym, because a combination as *Rhododendron decumbens* would be a homonym (due to *Rhododendron decumbens* D.Don ex G.Don, Gen. Hist. 3:846. 1834). Wallace (1992) considered it a subspecies, as we do, and recombined it as subsp. *subarcticum*, probably unaware that the epithet *decumbens*, even if not available for a species, is available and has priority for a subspecies. We accordingly make a recombination on the priority name.

Vaccinium uliginosum L. subsp. vulcanorum (Kom.) Alsos & Elven, comb. et stat. nov. BASIONYM: Vaccinium vulcanorum Kom., Repert. Spec. Nov. Regni Veg. 13:236. 1914. TYPE: RUSSIA (Far East): Kamtchatka, "in alpibus peninsulae Kamtschatka circa lacus Kunotzkoje," 19 Aug 1909 and 02 Sep 1909, V.L. Komarov (LE). Vaccinium uliginosum L. subsp. microphyllum (Lange) Tolm. var. vulcanorum (Kom.) Jurtz., Byull. Moskovsk. Obshch. Isp. Prir., Otd. Biol. 85(6):105. 1980.

Vaccinium uliginosum L. is polymorphic as described by Young (1970). Komarov's *Vaccinium vulcanorum* is, according to Tolmachev and Yurtsev (1980), a prostrate-pulvinate dwarf shrub with small, imbricate, rotundate leaves persisting in winter, and globose berries. In a phylogenetic analysis by Alsos et al. (2005), the "*vulcanorum*" entity is a central node from which both an amphi-Pacific and a circumpolar clade emerge. Both phylogenetic and morphological evidence support the taxon *vulcanorum* as a race, preferrably as a subspecies.

Gentianaceae

Gentianopsis barbata (Froel.) Ma subsp. raupii (A.E. Porsild) Elven, comb. nov. BASIONYM: Gentiana raupii A.E. Porsild, Sargentia 4:60. 1943. Type: CANADA: Northwest Territory, Mackenzie District, Mackenzie River between Wrigley and Blackwater R, A.E. Porsild 6571 (HOLOTYPE: CAN). Gentianopsis detonsa (Rottb.) Ma subsp. raupii (A.E. Porsild) Á. Löve & D. Löve, Bot. Not. 128:517. 1976. Gentianopsis raupii (A.E. Porsild) Iltis, Sida 2:134. 1965. Gentianella detonsa (Rottb.) G. Don subsp. raupii

(A.E. Porsild) J.M. Gillett, Ann. Missouri Bot. Gard. 44:217. 1957.

The entities of the *Gentianopsis detonsa–barbata* group in northern North America are still insufficiently studied, in spite of two revisions (Gillett 1957; Iltis 1965). They are rare taxa, restricted in their ranges and often disjunct. The "raupii" entity has been considered a separate species or a subspecies of *Gentianella / Gentianopsis detonsa*. Hultén (1968b) accepted *Gentiana raupii* as a separate species in northwestern Canada but said that it is "similar to *G. barbata*, but with fewer stem leaves; calyx rounded at base; corolla tube broadly obconic, the lobes broad, rounded". We support that view and hereby assign "raupii" to *Gentianopsis barbara* as a regional race. It occurs mainly along the Mackenzie River, and the entire range is within the glaciated areas. This is an entity that at some time (most probably postglacially) was able to differentiate in isolation from the main body of *Gentianopsis barbata*.

Asteraceae

Achillea alpina L. subsp. multiflora (Hook.) D.F. Murray & Elven, comb. et stat. nov. Basionym: Achillea multiflora Hook., Fl. Bor.-Amer. 1:318. 1833. Type: CANADA: "Throughout the woody country, and as far North as Fort Franklin," (HOLOTYPE: ?). Ptarmica multiflora (Hook.) Tzvelev in Jurtz., Fl. Arct. URSS 10:107. 1987.

The North American representative of the Achillea alpina complex has been treated in most northwestern

North American works (e.g., Hultén 1968a; Cody 1996, 2000) as *A. sibirica* Ledeb. Both names, *alpina* and *sibirica*, are based on Asian plants. Trock (2006) applied the name *A. alpina* without discussion for the North American plant. Russian authors have mostly treated the entities of the *A. alpina* complex as several species. Rank as largely allopatric subspecies of *Achillea alpina* is the better solution. The northwestern North American plants differ from the northeastern Asian ones in some quantitative features: capitulae more numerous, ligules smaller, and leaves slightly more dissected. We hereby recombine *A. multiflora* as a subspecies of *A. alpina*.

The Achillea alpina complex has been considered part of the segregate genus Ptarmica (e.g., Yurtsev

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1987). Acceptance of *Ptarmica* as a separate genus is untenable according to phylogenetic evidence (Guo et al. 2004).

Artemisia kruhsiana Besser subsp. alaskana (Rydb.) D.F. Murray & Elven, comb. et stat. nov. Basionym: Artemisia alaskana Rydb., N. Amer. Fl. 34(3):281. 1916. Type: U.S.A.: ALASKA: Yukon River, Nulato–Nowikakat, 23–27 Jul 1889, I.C. Russell (HOLOTYPE: US-417571).

Hultén (1968b) compared the northwestern North American Artemisia alaskana with the northeastern Asian *A. kruhsiana* and considered them related but specifically distinct. Artemisia kruhsiana was described with three allopatric to parapatric subspecies in northeastern Asia (Korobkov 1987). Korobkov (pers. comm.) indicated that *A. alaskana* was morphologically closest to *A. kruhsiana* subsp. *multisecta* (Leonova) Korobkov. We consider *A. alaskana* to be close enough to *A. kruhsiana* to be best considered a subspecies of the latter (see also Tkach et al. 2008 wherein *A. kruhsiana* and *A. alaskana* were very close in the phylogeny). In our opinion, the closest relationship is found with the Chukotkan subsp. *kruhsiana*. There is, however, an appreciable gap between the westernmost Alaskan occurrence of subsp. *alaskana* and the easternmost Asian occurrence of subsp. *kruhsiana*, as the species is absent from all of Chukchi Peninsula. We therefore propose subsp. *alaskana* as a fourth subspecies of *A. kruhsiana*.

Packera hyperborealis (Greenm.) Á. Löve & D. Löve subsp. wrangelica (Jurtz., Korobkov & V.V. Petrovsky) Jurtz., Korobkov & V.V. Petrovsky, comb. nov. Basionym: Senecio hyperborealis Greenm. subsp. wrangelica Jurtz., Korobkov & V.V. Petrovsky in Jurtz., Fl. Arct. URSS 10:216. 1987. Type: RUSSIA: Russian Far East, Wrangel Island, "pars centralis, in cursu superiore fl. Neizvestnaja (Incognita)," 22 Jul 1971, V.V. Petrovsky & O.D. Schteinberg (HOLOTYPE: LE).

Transfer of *Senecio hyperborealis* to *Packera* necessitates the new combination. *Packera hyperborealis* s. str. is diploid (Packer 1972, northwestern Canada, 2n = 46; Yurtsev & Zhukova 1972, northeastern Asia, 2n = 48). Subspecies *wrangelica*, on the other hand, is hexaploid (Zhukova & Petrovsky 1987, Wrangel Island, 2n = 138). This high number is more in accordance with the wide range of numbers found in the closely related D hetermole $M_{example}$ is preserved. Superior preserves for the closely related D hetermole $M_{example}$ is preserved.

P. heterophylla (Fisch.) E. Wiebe (= Senecio cymbalaria Pursh, Senecio resedifolius Less.).

Scorzoneroides autumnalis (L.) Moench subsp. pratensis (Hornem.) Elven, comb. nov. BASIONYM: Apargia pratensis Hornem., Hort. Bot. Hafn. 2:785. 1815. Leontodon pratensis (Hornem.) Rchb., Fl. Germ. Excurs. 1:253. 1831. Leontodon autumnalis L. var. pratensis (Hornem.) W.D.J. Koch, Syn. Fl. Germ. Helv. 418. 1837. Leontodon autumnalis L. subsp. pratensis (Hornem.) Gremli, Excursionsfl. Schweiz, ed. 3:242. 1878. Scorzoneroides autumnalis (L.) Moench var. pratensis (Hornem.) P.D. Sell, Fl. Great Brit. Irel. 4:531. 2006. Leontodon autumnalis L. var. taraxaci (L.) Hartm., Handb. Skand. Fl., ed. 4:252. 1843 (BASIONYM: Hieracium taraxaci L., Sp. Pl., ed. 2, 2:1125. 1763).

The new combination is necessitated by the transfer of *Leontodon autumnalis* L. to the genus *Scorzoneroides* Moench (cf., Sell & Murrell 2006). The provenience and characters of Hornemann's *Apargia pratensis* is not known to us, but the customary use of the name *pratensis* in northern Europe is for the plant considered here. The Nordic plants currently assigned under var./subsp. *pratensis* include Linnaeus' *Hieracium taraxaci* and are different from the central European alpine plants.

Solidago multiradiata Aiton subsp. **arctica** (DC.) Korobkov & Elven, comb. et stat. nov. BASIONYM: Solidago virgaurea L. var. (epsilon) arctica DC., Prodr. 5:339. 1836. TYPE: U.S.A: ALASKA: the Aleutian islands, "Unalaschka," and possibly RUSSIA: Russian Far East, Chukchi Peninsula: "ad sinum Sancti Laurentii." Solidago multiradiata Aiton var. arctica (DC.) Fernald, Rhodora 17:4. 1915. Solidago compacta Turcz., Bull. Soc. Imp. Naturalistes Moscou 13:73. 1840. Probably a nomen novum for var.

arctica as a species.

Solidago multiradiata Aiton is widespread and polymorphic. The plants around the Bering and Chukchi seas in eastern Chukotka and western and southwestern Alaska constitute the westernmost extension of the range for *S. multiradiata* and differ in several quantitative features. Hultén (1968a) accepted a variety, var. *arctica*. Russian authors (e.g., Korobkov 1987) have instead treated it as a separate species, *S. compacta*. We prefer to see *S. compacta* or var. *arctica* as a regional race, i.e., a subspecies. It might be uniformly tetraploid (2n = 36), as indicated by Löve and Löve (1975), but both diploid and tetraploid counts are known from *S. multiradiata* s. str.

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